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September 19, 2003

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO NRC BULLETIN 2003-02, "LEAKAGE FROM REACTOR PRESSURE VESSEL LOWER HEAD PENETRATIONS AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY"

Gentlemen:

Attachment 1 to this letter provides the TXU Generation Company LP (TXU Energy) response to NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" dated August 21, 2003.

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This communication contains the following new or revised commitments:

Commitment Number	Commitment
27297	The bare metal visual inspection scope for CPSES Unit 2 (fall 2003) and Unit 1 (spring 2004) is planned to include all 58 BMI penetrations including 100% of the circumference of each penetration as it enters the RV lower head. CPSES will provide the requested information within 60 days after plant restart following the next inspection at CPSES Unit 1 and Unit 2.
27298	If cleanliness conditions limit our ability to perform a 100% inspection, a best effort inspection for evidence of BMI leakage will be performed and necessary cleaning will be completed to ensure a 100% inspection at the next refueling outage. Should unexpected insulation access limitations be encountered, detailed walkdowns will be performed in order to prepare for any required modification for that unit to ensure a 100% inspection at the next refueling outage.
27299	This bare metal visual inspection will be remotely performed to the maximum extent practical using cameras capable of resolving relevant conditions. Certified VT-2 Level II or VT-2 Level III personnel shall interpret the data in accordance with written acceptance criteria with final resolution the responsibility of the Level III. The inspections will be documented by a report signed by the responsible Level III inspector. Video and photographic images to support the inspection findings will supplement the report.
27300	The inspection planned for subsequent CPSES refueling outages will include all 58 BMI penetrations including 100% of the circumference of each penetration as it enters the RV lower head. This inspection regime will be completed at least every third refueling outage or every five (5) years, whichever occurs first until CPSES and industry experience provides sound basis for a change in the inspection frequency or method.

If you have any questions concerning this matter, please contact Mr. J. D. Seawright at (254) 897-0140.

I state under penalty of perjury that the foregoing is true and correct.

Executed on September 19, 2003.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC,
Its General Partner

C. L. Terry
Senior Vice President and Principal Nuclear Officer

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

JDS/js
Attachment

c - T. P. Gwynn, Region IV
W. D. Johnson, Region IV
M. C. Thadani, NRR
Resident Inspectors, CPSES

RESPONSE TO NRC BULLETIN 2003-02: "LEAKAGE FROM REACTOR PRESSURE VESSEL LOWER HEAD PENETRATIONS AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY"

On August 21, 2003, the Nuclear Regulatory Commission (NRC) issued Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity." The NRC requested that specific information be provided within 30 days of the date of the Bulletin. TXU Energy hereby responds to the 30-day information request set forth in the Bulletin with respect to CPSES Units 1 and 2.

NRC Request: *All subject PWR addressees are requested to provide the following information. The responses for facilities that will enter refueling outages before December 31, 2003, should be provided within 30 days of the date of this bulletin. All other responses should be provided within 90 days of the date of this bulletin.*

NRC Request 1(a): *A description of the RPV lower head penetration inspection program that has been implemented at your plant. The description should include when the inspections were performed, the extent of the inspections with respect to the areas and penetrations inspected, inspection methods used, the process used to resolve the source of findings of any boric acid deposits, the quality of the documentation of the inspections (e.g., written report, video record, photographs), and the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of the RPV lower head penetrations.*

Response:

Past Inspections: Each unit has undergone a visual inspection under the Reactor Pressure Vessel each refueling outage unless precluded by radiation fields. Insulation removal has not been performed for these inspections, although, if required for leakage source identification or evaluation of target material, insulation would have been removed. These inspections looked for new conditions and identified any changes to the conditions previously identified. A comparison to documentation of previous walkdowns was performed using descriptions and photographs of the areas observed from the previous and current walkdowns.

Any boric acid deposits identified by these walkdowns, were evaluated to determine whether there was wastage of any system, structure, or component and determine necessary corrective actions. Observed areas of boric acid leakage or accumulation were limited to the vertical sides of the RPV insulation with clear evidence of outage-related leakage from the refueling cavity. No evidence of operational leakage such as from the BMI penetration tubes has been observed and without noteworthy leakage evidence, even with the insulation in place, consequential degradation of the RCS pressure boundary is extremely unlikely. In addition, inspections have been performed as part of the ASME Section XI system leakage test walkdown at every refueling outage (RFO) with the system at normal operating pressure and the insulation in place. These walkdown inspections are performed by procedure and documented on a system pressure test report in accordance with the ASME Section XI program. The system pressure tests have not identified any BMI leakage to date.

Compliance with Regulatory Requirements:

CPSES has reviewed relevant facts regarding compliance with the applicable design and programmatic Regulatory Requirements identified within this Bulletin and concluded that regulatory requirements are currently being met. The review considered original compliance to regulatory requirements (related to the integrity of the RPV lower head penetrations) as well as the actions related to assuring continued compliance during the operating period.

The following regulatory requirements were cited in the Bulletin as providing the basis for the Bulletin's assessment:

- Appendix A to 10 CFR Part 50, General Design Criteria for Nuclear Power Plants:

  Criteria 14 – Reactor Coolant Pressure Boundary

  Criteria 31 – Fracture Prevention of Reactor Coolant Pressure Boundary, and

  Criteria 32 - Inspection of Reactor Coolant Pressure Boundary
- Plant Technical Specifications
- 10 CFR 50.55a, Codes and Standards, which incorporates by reference Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code
- Appendix B of 10 CFR Part 50, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criteria V, IX, and XVI

General Design Criteria (GDC): The Bulletin states that the applicable GDC include GDC 14, GDC 31, and GDC 32. GDC 14 specifies that the reactor coolant pressure boundary (RCPB) be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. GDC 31 specifies that the RCPB be designed with sufficient margin to assure that the probability of rapidly propagating fracture is minimized. GDC 32 specifies that components that are part of the RCPB be designed to permit periodic inspection and testing of important areas and features to assess their structural and leaktight integrity.

As part of the original design and licensing of CPSES, TXU Energy demonstrated that the design of the reactor coolant pressure boundary meets these requirements. CPSES complied with these criteria in part by: 1) selecting materials with excellent corrosion resistance and extremely high fracture toughness for reactor coolant pressure boundary materials, and 2) following ASME Codes and Standards and other applicable requirements for fabrication, erection, and testing of the pressure boundary parts. As described above, the requirements established for design, fracture toughness, and inspectability in GDC 14, 31, and 32 respectively were satisfied during the initial design and licensing, and continue to be satisfied during operation, even in the presence of a potential for stress corrosion cracking of the reactor pressure vessel head penetrations.

Inspection Requirements (10 C.F.R. § 50.55a and ASME Section XI): CPSES complies with ASME Code Section XI inspection requirements for insulated components as part of the CPSES ISI program. Since the head is insulated, and the BMI penetration nozzles do not represent a bolted flange, the Code permits these inspections to be performed with the insulation left in place.

Quality Assurance Requirements (10 CFR 50, Appendix B): CPSES administrative controls comply with requirements of 10 CFR 50, Appendix B, Criteria V (Instructions, Procedures, and Drawings), Criteria XI (Control of Special Processes), and Criterion XVI (Corrective Action). Inspection and evaluation of boric acid deposits and/or reactor coolant system (RCS) leakage that could cause degradation of the reactor vessel head, described in 1.A above, complies with these administrative controls.

Technical Specifications: Inspections performed to date in compliance with the requirements of the ASME B&PV Code have identified no evidence of leakage from the lower head of the CPSES RPVs and therefore, the CPSES units are in compliance with applicable Technical Specification requirements related to operational leakage.

CPSES Units 1 and 2 therefore meet the applicable regulatory requirements.

NRC Request 1(b): *A description of the RPV lower head penetration inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the extent of the inspections which will be conducted with respect to the areas and penetrations to be inspected, inspection methods to be used, qualification standards for the inspection methods, the process used to resolve the source of findings of boric acid deposits or corrosion, the inspection documentation to be generated, and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of the RPV lower head penetrations.*

Response:

Extent of the inspections: The inspection scope for CPSES Unit 2 (fall 2003) and Unit 1 (spring 2004) is planned to include all 58 BMI penetrations including 100% of the circumference of each penetration as it enters the RV lower head. The insulation design for both CPSES units is similar to that at the South Texas Project Unit 1 and access for inspection is planned through existing removable insulation panels. Every reasonable attempt will be made to perform a 100% inspection; however the scope may be limited in the event that visual access to the bare metal surface proves extremely difficult. If cleanliness conditions limit our ability to perform a 100% inspection, a best effort inspection for evidence of BMI leakage will be performed and necessary cleaning will be completed to ensure a 100% inspection at the next refueling outage. Should unexpected insulation access limitations be encountered, detailed walkdowns will be performed in order to prepare for any required modification for that unit to ensure a 100% inspection at the next refueling outage.

This bare metal visual inspection is a first of a kind activity for the CPSES units and involves a high dose area. Consequently, the inspection will be remotely performed to the maximum extent practical using cameras capable of resolving relevant conditions. Certified VT-2 Level II or VT-2 Level III personnel shall interpret the data in accordance with written acceptance criteria with final resolution the responsibility of the Level III.

The inspection planned for subsequent CPSES refueling outages will include all 58 BMI penetrations including 100% of the circumference of each penetration as it enters the RV lower head. This inspection regime will be completed at least every third refueling outage or every five (5) years, whichever occurs first until CPSES and industry experience provides sound basis for a change in the inspection frequency or method.

Process used to resolve the source of findings: The site corrective action program (SmartForm) will be employed to evaluate all findings of leakage during the BMI penetration inspection. The process will include evaluations to determine if the findings of leakage are relevant or non-relevant as an RCS leak and establish the source of the leakage. Examples of relevant leakage are identified in the March 2003 EPRI report "Visual Examination for Leakage of PWR Reactor Head Penetrations, Rev. 2." This report will be supplemented by the as-found pictures of the boric acid accumulation at South Texas Project Unit 1 at BMI locations #1 and #46 available on the NRC web site to determine characteristics of relevant indications. Unlike the reactor vessel head upper penetrations, the bottom head location has no other potential leak source location during normal plant operation that could result in boron accumulation. Cavity seal ring leakage that occurs during a refueling outage only occurs at low temperature and would be expected to result in staining without "popcorn like" accumulation features of an RCS leak at normal operating temperature. The lower head location of the BMI penetrations is also not likely to be affected by non-adherent, settled debris that could mask and hamper a VT-2 examination. Tools to evaluate relevant indications of leakage (boron accumulation) would likely include sample collection for chemical and isotopic analysis.

Examples of non-relevant leakage may include thin films or stains of boron or light surface rust having a characteristic of no discernable thickness with no associated accumulation around the penetration. Non-relevant indications would typically have a trail leading to the source, which is away from the BMI penetration. Each case of leakage will be evaluated through the site corrective action program process to document the determination regarding whether the finding is relevant or non-relevant to leakage from a BMI nozzle. Thin film boron stains or light rust films are not likely to be chemically or isotopically analyzed due to little accumulation that could be sampled.

Documentation of the inspections: The inspections will be documented by a report signed by the responsible Level III inspector. Video and photographic images to support the inspection findings will supplement the report.

Basis for concluding that your plant will satisfy applicable regulatory requirements: Performance of Bare Metal Visual inspections of the bottom head of each CPSES unit's reactor pressure vessel will ensure compliance with the applicable regulatory requirements on a continuing basis.

NRC Request 1(c): *If you are unable to perform a bare-metal visual inspection of each penetration during the next refueling outage because of the inability to perform the necessary planning, engineering, procurement of materials, and implementation, are you planning to perform bare-metal visual inspections during subsequent refueling outages? If so, provide a description of the actions that are planned to enable a bare-metal visual inspection of each penetration during subsequent refueling outages. Also, provide a description of any penetration inspections you plan to perform during the next refueling outage. The description should address the applicable items in paragraph (b).*

Response: As stated in the response to 1(b) above, CPSES anticipates full access for 100% inspection of all BMI penetrations and therefore this section is not applicable.

NRC Request 1(d): *If you do not plan to perform either a bare-metal visual inspection or non-visual (e.g., volumetric or surface) examination of the RPV lower head penetrations at the next or subsequent refueling outages, provide the basis for concluding that the inspections performed will assure applicable regulatory requirements are and will continue to be met.*

Response: CPSES is planning bare metal visual inspections at Units 1 and 2 as described above.

NRC Request 2. *Within 60 days of plant restart following the next inspection of the RPV lower head penetrations, the subject PWR addressees should submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found:*

Response:

CPSES will provide the requested information within 60 days after plant restart following the next inspection at CPSES Unit 1 and Unit 2.